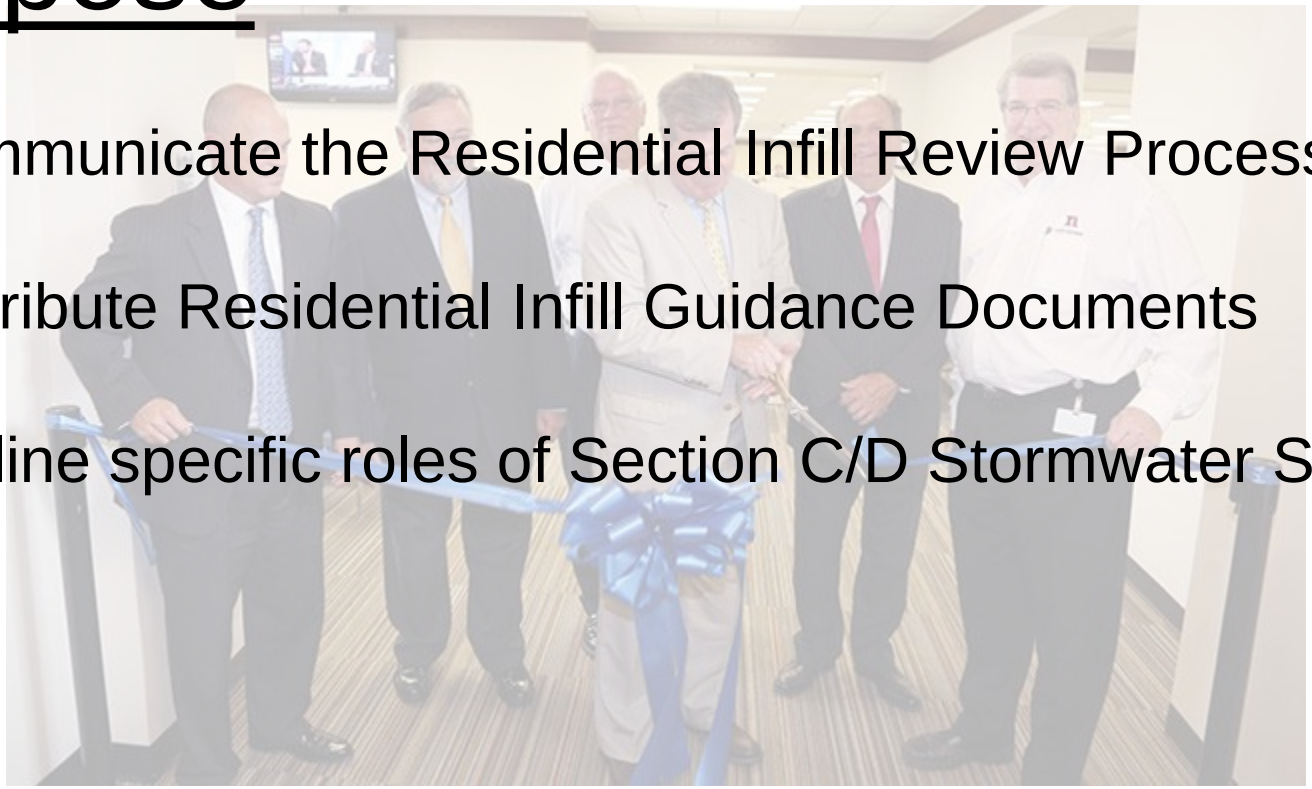
Residential Infill
Development Services Center
Training

Welcome

October 31, 2014

Purpose



1. Communicate the Residential Infill Review Process

2. Distribute Residential Infill Guidance Documents

3. Outline specific roles of Section C/D Stormwater Staff

Agenda

I. Infill Committee Process and Outcomes

II. Introduction to Residential Infill Requirements

III. Residential Infill Documents (Handouts)

IV. Section C/D Stormwater Review Process

I. Infill Committee Process and Outcomes

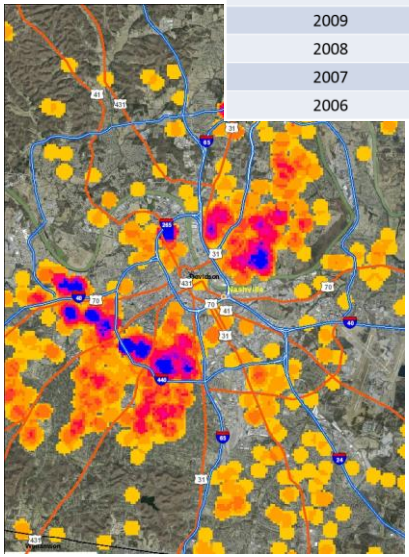
11 Committee Meetings

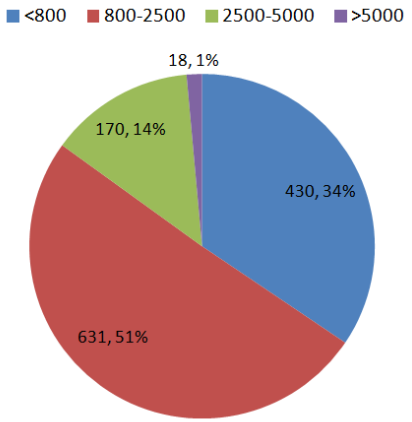
Codes
Stormwater
Council
Legal
Planning
Public Works
Homebuilders
Community – Homeowners, Infill
Nashville
Mayors Office
Consultant Team – Hawkins Partner's Inc. and AMEC

Data Analysis

2006 – 2013
2013 was a typical year

Permit Year	Additions	New Construction
2013	**660**	**1548**
2012	764	1818
2011	609	1528
2010	659	1358
2009	659	1485
2008	826	2030
2007	971	3744
2006	934	4070





“Infill (Regulated Residential)”

The creation of 800 to 15,000 square feet of

additional net impervious area (IA) for a residential dwelling(s)

through new development, redevelopment, or rehabilitation in existing neighborhoods.

“Impervious Area (IA)”

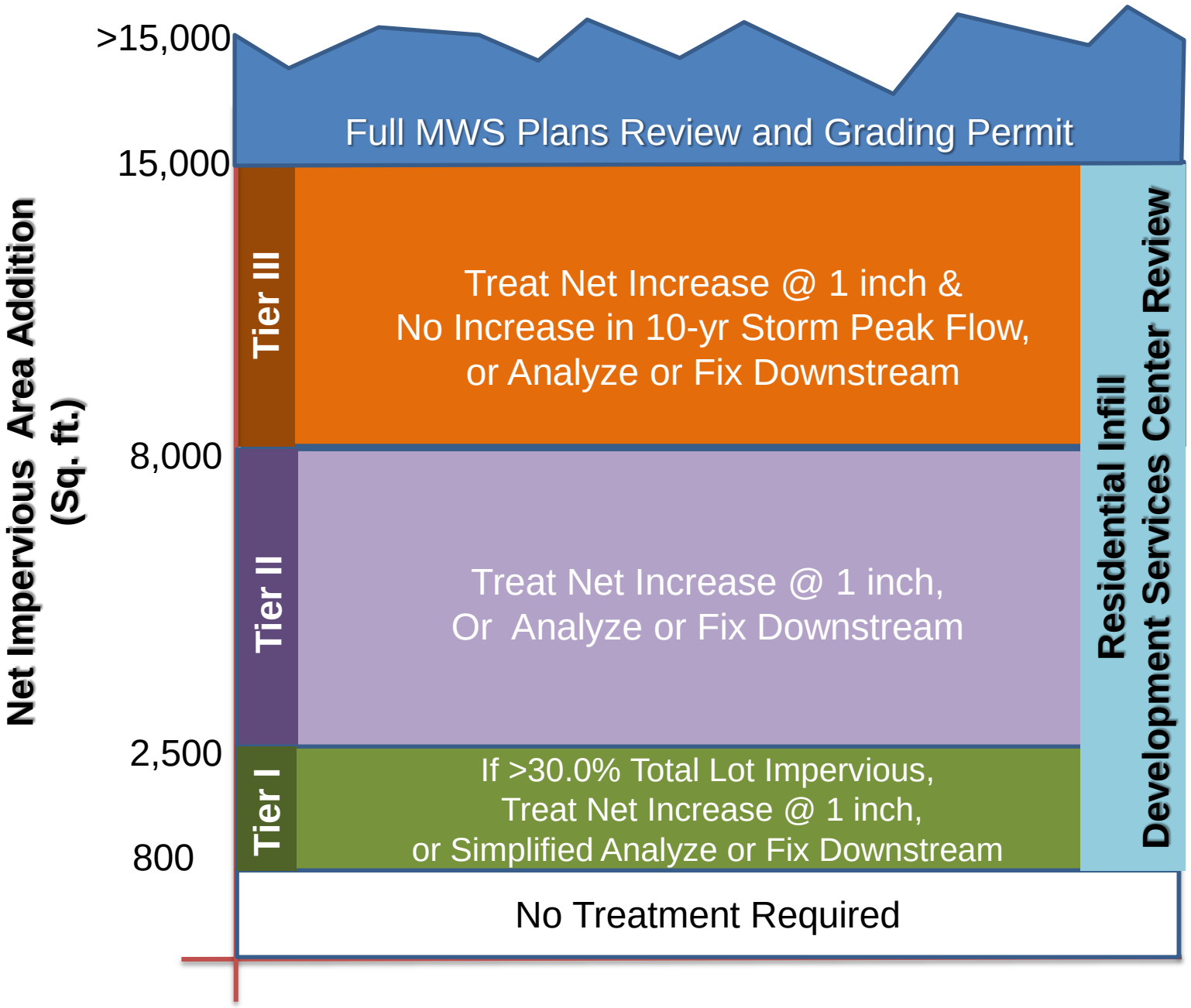
The portion of a parcel of property that is covered by any material,

including without limitation roofs, streets, sidewalks and parking lots paved with asphalt, concrete, compacted sand, compacted gravel or clay,

that substantially reduces or prevents the infiltration of stormwater.

Impervious area shall not include natural undisturbed surface rock.

II. Introduction to Residential Infill Requirements


Net Impervious Area Addition (Sq. ft.)
>15,000
15,000
8,000
2,500
800
Full MWS Plans Review and Grading Permit
Tier III
Treat Net Increase @ 1 inch &
No Increase in 10-yr Storm Peak Flow,
or Analyze or Fix Downstream
Tier II
Treat Net Increase @ 1 inch,
Or Analyze or Fix Downstream
Tier I
If >30.0% Total Lot Impervious,
Treat Net Increase @ 1 inch,
or Simplified Analyze or Fix Downstream
No Treatment Required
Residential Infill
Development Services Center Review

Exemptions to Infill Regulations

If Yes, they are not Infill:

1. Difference in Impervious Area is less than 800 ft^2?

2. For Tier 1 (IA Net 800-2,500 ft^2), is Total IA<30% of Lot Area?

3. Platted after 1982? and Existing Grading Permit?

4. If lot area is greater than 40,000 ft^2

5. If the Impervious Area added is greater than 15,000 ft^2 (traditional grading permit route)

III. Residential Infill Documents (Handouts)

ORDINANCE NO. BL2014-910

An Ordinance amending Chapter 15.64 of Title 15 of the Metropolitan Code pertaining to stormwater management regulations for infill development.

BE IT ENACTED BY THE COUNCIL OF THE METROPOLITAN GOVERNMENT OF NASHVILLE DAVIDSON COUNTY:

Section 1. Section 15.64.010 of the Metropolitan Code is hereby amended by adding the following new definitions:

"Infill (regulated residential)" means the creation of 800 to 15,000 square feet of additio impervious area (IA) for a residential dwelling(s) through new development, redevelopm or rehabilitation in existing neighborhoods.

"Impervious area (IA)" means the portion of a parcel of property that is covered by any including without limitation roofs, streets, sidewalks and parking lots paved with asphalt, concrete, compacted sand, compacted gravel or clay, that substantially reduces or preve infiltration of storm water. Impervious area shall not include natural undisturbed surface

"Lot" means a tract, plot or portion of a subdivision or parcel of land intended as a unit f purpose, whether immediate or future, for transfer of ownership or for building developn

Section 2. Section 15.64.130 of the Metropolitan Code is hereby amended by deleting su and substituting with the following new subsection A.:

A. Single-family to two-family individual residential dwellings in any given area that do n drainage channel, do not alter the natural ground elevation or vegetation by an amount than specified in the technical guidelines to be issued by the metropolitan department of and sewerage services, or do not meet the definition of regulated residential infill;

Section 3. Title 15 of the Metropolitan Code is hereby amended by adding the following n Section 15.64.131:

15.64.131 Infill development – Applicability and requirements.

A. No project shall add impervious area without meeting the requirements of this section otherwise specifically exempt from regulation pursuant to this section.

B. There shall be three tiers of infill development for projects that are subject to infill reg this section:

1. Tier I - Projects creating between 800 and 2,500 square feet of net additional IA and IA exceeding 30.0% must treat, by means of capture of the first inch of rainfall runoff, a the net increase of IA.

2. Tier II - Projects creating between 2,500 and 8,000 square feet of net additional IA, w to total lot IA percent must treat, by means of capture of the first inch of rainfall runoff, the net increase of IA.

3. Tier III – Projects creating between 8,000 and 15,000 square feet of net added IA, wi total lot IA percent, must treat, by means of capture of the first inch of rainfall runoff an net increase of IA. Additionally, the project design must insure there is not an increase i storm peak flow from the site, and be certified by a professional engineer.

C. Construction projects that meet the definition of regulated residential infill shall include provisions for the management of the first inch (1") of rainfall runoff from an impervious area equal to the net added impervious area; and shall not be exempt from the provisions of Section 15.64.120 concerning prohibition of increase in the degree of flooding.

D. Prior to the net addition of at least 800 square feet of impervious area or issuance of a building permit, a sufficient development plan and supporting information required by the latest version of the regulated residential infill guidance document shall be submitted to and approved by the metropolitan department of water and sewerage services.

E. The net added impervious area shall be calculated by subtracting the IA present in the aerial photography data obtained by Metro in March 2014 from the proposed post-development IA and maintaining the original property boundary as the regulated project boundary, regardless of subdivision, re-plat, horizontal property regime, or any other modification of property boundaries by deed or plat.

F. The owner/developer of a project meeting the definition of regulated residential infill shall endeavor to treat the first 1" of rainfall runoff from net added impervious area using methods from the regulated residential infill guidance document. If this treatment proves impractical, analysis of the downstream management system to identify adequate drainage per the regulated residential infill guidance document or improving downstream drainage to mitigate a known flooding problem with assistance from a professional engineer may be considered for all or part of the 1" treatment requirement.

G. The metropolitan department of water and sewerage services shall have the authority to offer additional runoff volume reduction measures and incentives. Refer to the latest version of the regulated residential infill guidance document for details.
H. Notwithstanding other provisions of this section to the contrary, excluded from infill regulation are projects that:
(1) add less than 800 square feet of net new IA,
(2) add more than 15,000 square feet of net new IA,
(3) are on lots larger than 40,000 square feet, or
(4) are on lots with a grading permit previously filed with the metropolitan department of water and sewerage services, as long as the post-construction IA conforms to the original grading plan.

I. Projects on lots larger than 40,000 square feet may seek infill classification on a case-by-case basis.

Section 4. This Ordinance shall take effect from and after its enactment, the welfare of The Metropolitan Government of Nashville and Davidson County requiring it.

Sponsored by: Burkley Allen , Emily Evans , Jason Holleman , Peter Westerholm , Sean McGuire

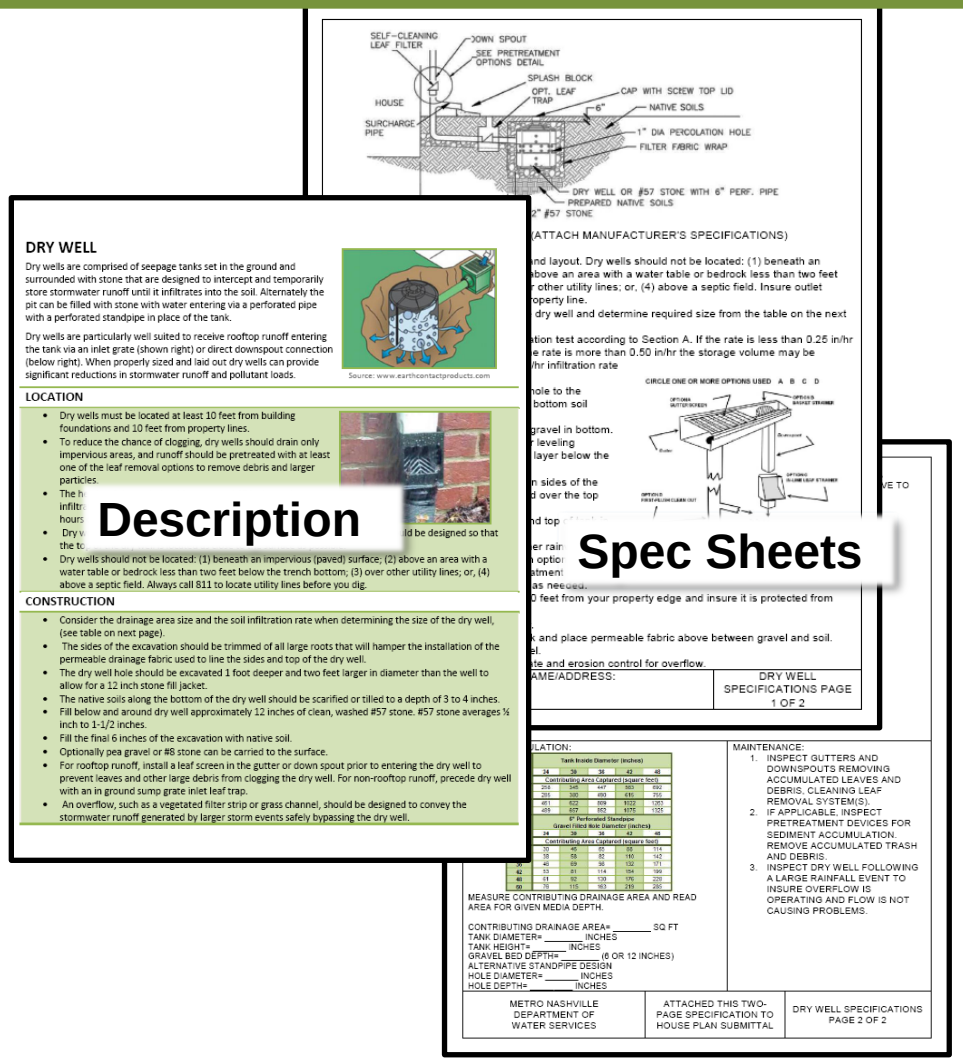
LEGISLATIVE HISTORY	
Introduced:	October 7, 2014
Passed First Reading:	October 7, 2014
Referred to:	Public Works Committee
Passed Second Reading:	October 21, 2014
Passed Third Reading:	
Approved:	
By:	

Requests for ADA accommodation should be directed to the Metropolitan Clerk at 615/862-6770.

Technical Guidance

How do we capture an inch?

- Vegetated Filter Strips
- Rain Garden
- Permeable Pavers
- Modified French Drain
- Dry Well
- Cisterns



Checklist

STORMWATER Checklist - Metropolitan Government of Davidson County, Nashville
Residential Infill Lot Developments

Please complete the following information for intake of building permit application in Development Services Center.

A. PROJECT DATA

Applicant Name:			**Property Address:**	
Address:			**Parcel:**	**Lot Area/Project Area:**
City:	**State:**	**Zip:**	**Impervious Area (PRE):**	**Impervious Area (POST):**
Phone No.:	**Email:**		**Tier of Development:** *(FILL/CHECK Appropriate Tier)*	O **Tier 1: 800-2,500 sf** ^ O **Tier 2: 2,500-8,000 sf** O **Tier 3: 8,000-15,000 sf** *
Permit/Case No.:			^ Total post impervious area > 30% of Lot Area * Professional engineer's stamp required for **Tier 3**, 10-year peak flow calculations	

B. GREEN INFRASTRUCTURE CONTROLS & PRACTICES *FILL/CHECK appropriate Green Infrastructure.*

Refer to Residential Infill Ordinance

O Cisterns	O Permeable Pavers	O Alternative Method: **
O Dry Well	O Rain Gardens	_____
O Modified French Drain	O Vegetated Filter Strips	** Professional engineer's stamp required for Tier 2 & Tier 3

C. SITE PLAN ***Attach a copy of the site plan depicting specifications below.*** *FILL/CHECK items included with plan.*

O Impervious area (existing & proposed)	O Lot/building layout with dimensions	O Erosion & sediment control measures
O Culvert/Drainage pipe(s) proposed in ROW	O Contours (existing & proposed)	O Buffers (stream, floodway) zones
O All points where stormwater leaves the site	O Scale on drawing	O 100-yr floodplain boundary
O Plan stamped by a licensed surveyor/engineer	O Easements on property	O Location of green infrastructure

D. AGREEMENT ***(by applicant)***

O Culvert/drainage pipe proposed in Metro right-of-way (ROW). The minimum diameter is 15 inches and must be constructed of ____reinforced concrete (RCP) or ____corrugated metal (CMP) and anchored with headwalls. Diameter:_____Length:_____

O The increase in impervious area (IA) will be less than 15,000 square feet and meet grading permit exemption criteria.

O Erosion and sediment control measures will be installed **prior** to any site disturbance and maintained during the entire construction phase to prevent sediment from leaving the site.

O All disturbed areas on the site will be stabilized with vegetation before requesting a final inspection.

O No post-development drainage issues will result from completion of this project on adjacent property owners, the Metro drainage easement, or Metro public right of way. Any damage to existing drainage structures from construction activities will be replaced by comparable materials at the builder's expense.

I certify that I have reviewed this document and understand the stormwater requirements herein. I understand that these requirements will be inspected and enforced by the Metro Water Services, Stormwater Office and failure to comply may result in the issuance of a Stop Work Order, monetary penalties, or Environmental Court Injunctions.

Print Name:	**Signature:**	**Date:**

If you have questions related to infill development, contact Kimberly Hayes via email at kimberly.hayes@nashville.gov or phone (615)862-4276.

METRO WATER SERVICES

IV. Section C/D Stormwater Review Process

Residential Infill Permit Flowchart

Nashville/Davidson County

Pre-Application Meeting (optional)
An optional meeting with the Development Service Center is encouraged to assure correct and timely permit application preparation and review. We will determine if a proposed project qualifies for an exemption and explain how technical guidelines and criteria should be applied.

Submit Application
Development Services Center (first floor of the Metro Office Building, 800 Second Avenue South)

Application & Plans submitted with all required documentation for Preliminary Zoning Review and Application Submittal

Technical Review & Approval
(Development Services Center)

Development Services Center Representative Departments

- Codes
- Fire Marshal
- Public Works
- Water Services
- Planning
- Stormwater
- Historical Commission
- MDHA

Residential Infill Permit Issued
(with building permit)

Site Inspection
(Codes and Stormwater)

Building Permit site inspections will take place as usual (Footing, Framing, Final) with the inspector having two additional items to record observations:
1. Erosion Control Measures
2. Progress of Green Infrastructure Installation as outlined in the Residential Infill Permit.

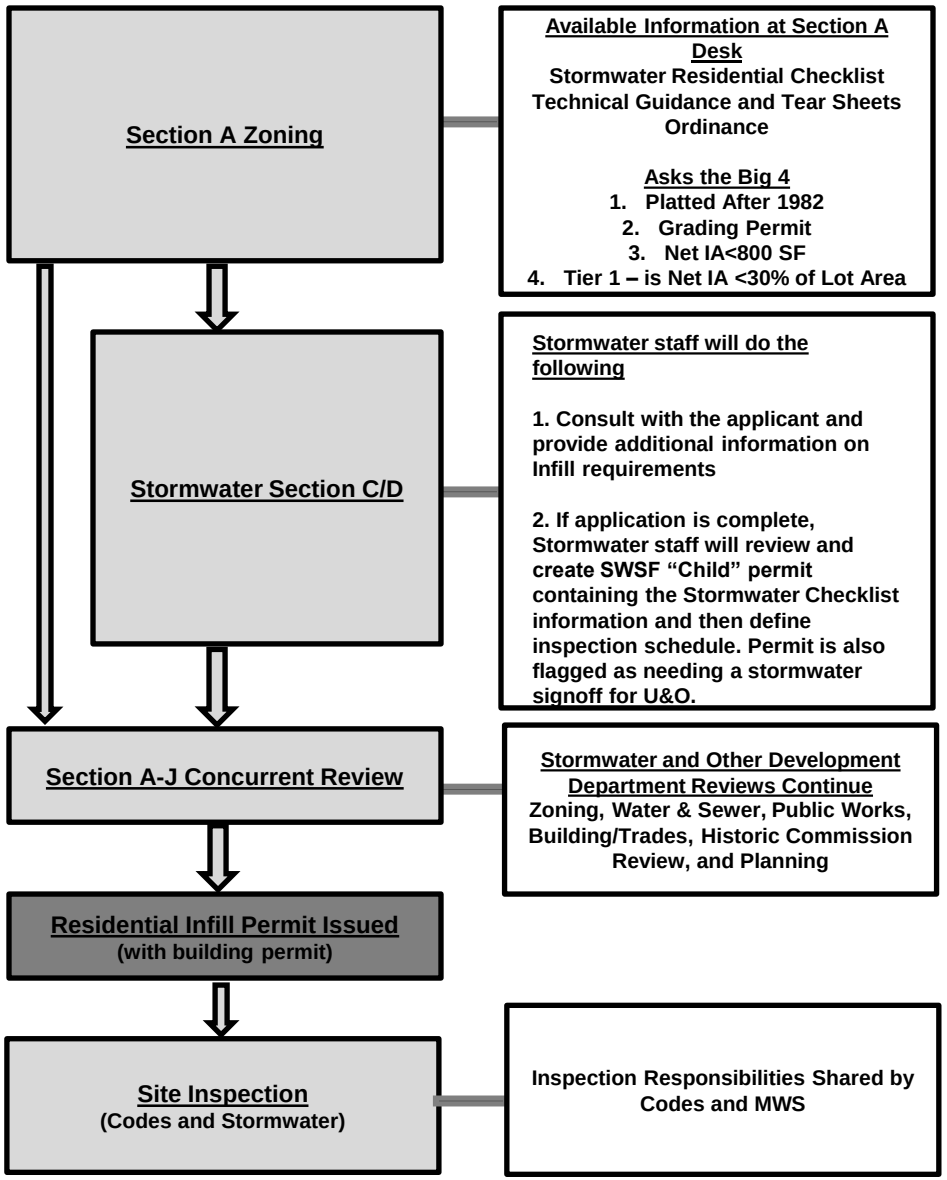
The inspector will flag the development for stormwater inspection if the permit is not being followed and stormwater will make a site visit to inspect.

Additional checks by the stormwater inspector will be performed within this Site Inspection phase.

Use and Occupancy Certificate Issued

Maintenance requirements of stormwater features can be added to this certificate/notification.

Residential Infill Permit Flowchart
Development Services Center
Nashville/Davidson County



Example Submittal

Gillock St (Tier I)

Before

Lot Area – 0.55 Acre

Impervious Area 6,000 sf (25%)

Gillock St (Tier I)

After

Lot Area – 0.55 Acre

Impervious Area 7,700 sf (32%)

Impervious Area Before = 6,000 sf
Impervious Area After = 7,700 sf

Net Increase IA = 1,700 sf

Gillock St (Tier I)

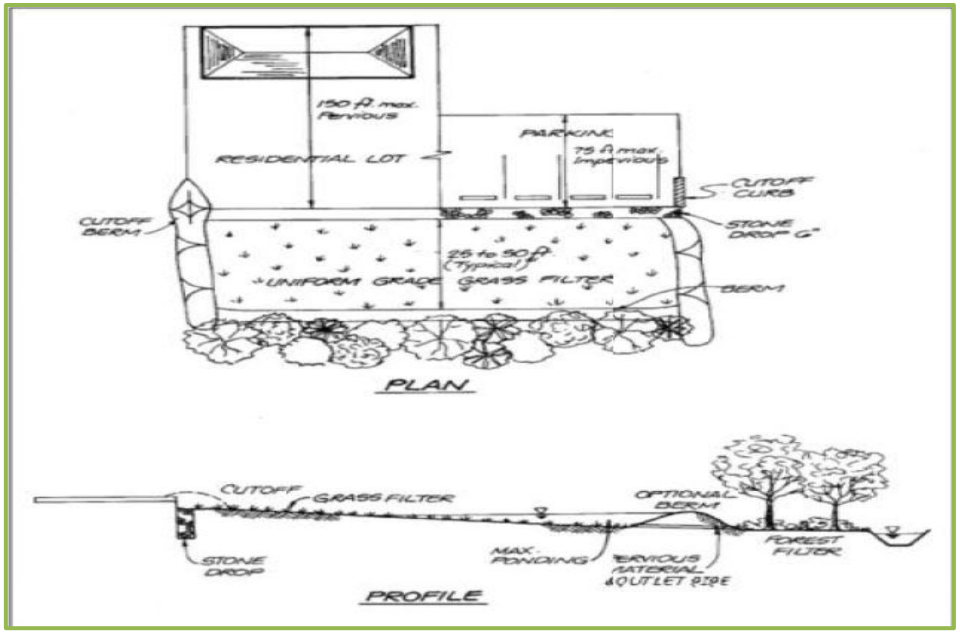
After

Lot Area – 0.55 Acre

Impervious Area 7,700 sf (32%)

Net Increase IA = <u>1,700 sf</u>

Sheet flow
towards back of property



Gillock St (Tier I)

STORMWATER Checklist - Metropolitan Government of Davidson County, Nashville
Residential Infill Lot Developments

Please complete the following informatic

A. PROJECT DATA

Applicant Name:

Address:

City: **State:**

Phone No.: **Email:**

Permit/Case No.:

B. GREEN INFRASTRUCTURE CONTRO

O Cisterns
O Dry Well
O Modified French Drain

C. SITE PLAN ***Attach a copy of the site***

O Impervious area (existing & proposed)
O Culvert/Drainage pipe(s) proposed in ROW
O All points where stormwater leaves the site
O Plan stamped by a licensed surveyor/engineer

D. AGREEMENT ***(by applicant)***

O Culvert/drainage pipe proposed in Metro right- ____reinforced concrete (RCP) or ____corrugatec

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Print Name: **Signature:**

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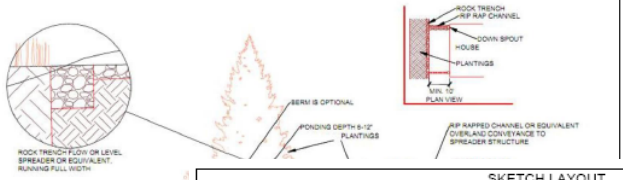
TYPICAL COMPONENTS



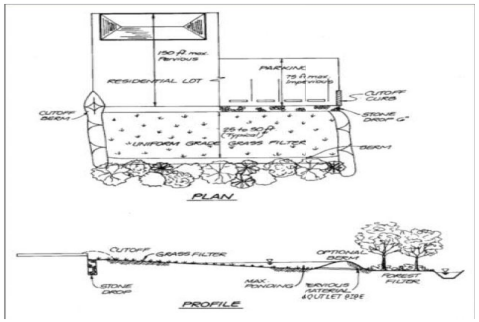
CONSTRUCTION STEPS:

1. Review potential filter s away from the structure over utilities is acceptal insure utility locations a concentrated overflow i
2. Measure the area drain minimum length from th spreader options.
3. Lay out and mark filter
4. Construct flow spreade
5. Construct filter strip opt
6. Construct erosion contr
7. Plant dense vegetation
8. Insure temporary erosi

METRO NASHVILLE DEPARTMENT OF WATER SERVICES

SKETCH LAYOUT

PROVIDE PLAN AND ELEVATION VIEWS OF FILTER STRIP AND HOUSE SHOWING ROOF AREA DIRECTED TO FILTER STRIP AND KEY DIMENSIONS, CONNECTIONS AND OVERFLOW RELATIVE TO PROPERTY LINE.



SIZING CALCULATION:

Contributing Drainage Area (square feet)	Filter Strip Type		
	Conventional	Amended Soil	Berm
	Filter Strip Area (sq ft)		
100	200	70	50
500	1000	350	250
1000	2000	670	500
2000	4000	1400	1000
3000	6000	2700	1500
4000	8000	5400	2000
5000	10000	6700	2500

MEASURE CONTRIBUTING DRAINAGE AREA AND READ AREA FOR GIVEN FILTER TYPE.

CONTRIBUTING DRAINAGE AREA= _____ SQ FT
FILTER STRIP AREA= _____ SQ FT
CONVENTIONAL – 25' MINIMUM LENGTH
BERM OPTION – 15' MINIMUM LENGTH

MAINTENANCE:

1. INSPECT GUTTERS AND DOWNSPOUTS REMOVING ACCUMULATED LEAVES AND DEBRIS, CLEANING LEAF REMOVAL SYSTEM(S).
2. IF APPLICABLE, INSPECT PRETREATMENT DEVICES FOR SEDIMENT ACCUMULATION. REMOVE ACCUMULATED TRASH AND DEBRIS.
3. WATER AS NEEDED TO PROMOTE PLANT GROWTH AND SURVIVAL ESPECIALLY IN THE FIRST TWO SEASONS.
4. PROVIDE NORMAL TURF OR GARDEN MAINTENANCE - MOW, PRUNE, AND TRIM AS NEEDED.
5. INSPECT THE VEGETATED FILTER STRIP FOLLOWING RAINFALL EVENTS. FIX EROSION ISSUES IMMEDIATELY.

METRO NASHVILLE DEPARTMENT OF WATER SERVICES	ATTACHED THIS TWO-PAGE SPECIFICATION TO HOUSE PLAN SUBMITTAL	FILTER STRIP SPECIFICATIONS PAGE 2 OF 2

Residential Infill
Development Services Center
Training

Questions

October 31, 2014